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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/058,650	01/28/2002	Shiuh-Hui Steven Chen	AP01985	3859

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MOTOROLA, INC.
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EXAMINER

NGUYEN, DONGHAI D

ART UNIT	PAPER NUMBER
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3729

DATE MAILED: 03/17/2004

5

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/058,650

Applicant(s)

CHEN ET AL.

Examiner

Donghai D. Nguyen

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 January 2004.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) 10-20 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-9 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 28 January 2002 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 2.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. The proposed reply filed on January 22, 2004 has been entered as Amendment A, Paper No. 4.

Election/Restrictions

2. Applicant's election with traverse of Group I (claims 1-10) in Paper No. 4 is acknowledged. The traversal is on the ground(s) that "the groups are not distinct from each other and will require the same search, which should not be considered burdensome". This is not found persuasive because Group I (claims 1-10) does not require activating the vacuum source and breaking the plurality of tethers in Groups II and III and Group II does not require the positioning the wafer on rigid backing. Therefore, the Groups are distinct from each other and required different searches since the groups are non-coextensive, so the restriction for examination purposes as indicated is proper.

The requirement is still deemed proper and is therefore made FINAL.

Information Disclosure Statement

3. The listing of references in the specification is not a proper information disclosure statement. 37 CFR 1.98(b) requires a list of all patents, publications, or other information submitted for consideration by the Office, and MPEP § 609 A(1) states, "the list may not be incorporated into the specification but must be submitted in a separate paper." Therefore, unless the references have been cited by the examiner on form PTO-892, they have not been considered.

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Drawings

4. Figures 1-3 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

5. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because reference character "82" has been used to designate both "topside" and "a tip". A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Specification

6. The disclosure is objected to because of the following informalities: the phrase "application Ser. ..., entitled" (Spec. page 2, line 7) needs to be completed.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

7. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter, which the applicant regards as his invention.

8. Claims 1-9 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

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The phrase "moving ... mechanism" (claim 1, lines 9-10) is vague and indefinite since it is unclear how the attachment mechanism being broken, furthermore, it is unclear how the thin die is positioned and/or attached to the support body by the attachment mechanism so the attachment mechanism can be broken.

The phrase "a surface" or "the surface" (claims 8, lines 2-4 and claim 9, line 1) is vague and indefinite since it is uncertain as to what surface and/or surface of what part Applicants are referring to.

Claim Rejections - 35 USC § 102

9. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) The invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

10. Claims 1, 6, and 7, are rejected under 35 U.S.C. 102(b) as being anticipated by US Patent No. 4,494,902 to Kuppens et al.

Regarding claim 1, Kuppens et al. disclose a method of separating a thin die (200) from a support body of a semiconductor wafer, the thin die attached to the support body (201) by an attachment mechanism (inherent), the method comprising the steps of: positioning a tip (206) of a handler above the thin die (Fig. 1a), the tip having a passageway to a vacuum source (col. 1, lines 66-67); positioning an ejection pin (207) in a spaced apart relationship beneath the thin die (Fig. 1a); moving the tip of the handler downward toward the thin die to break the attachment mechanism (Fig. 1b) and clamp the thin die between the tip of the handler and the ejection pin

(Fig. 1c); and moving the ejection pin upward in the direction of the tip of the handler until the thin die is extracted from the wafer (Fig. 1d).

Regarding claims 6 and 7, see Figs. 1c-1d and col. 7, lines 18-26.

Claim Rejections - 35 USC § 103

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

12. Claims 2, 4, 5 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kuppens et al in view of US Patent 4,166,562 to Keizer et al.

Regarding to claims 2, Kuppens et al is silent in the attachment mechanism for attaching the die to support body. Keizer et al teach the attachment mechanism (56) includes a plurality of tethers (54) that extends between the thin die (51) and the support body (62) for clamping the die to the support body (col. 7, lines 16-18). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Kuppens et al attachment mechanism as taught by Keizer et al for clamping the die to the support.

Regarding claim 4, Kuppens et al do not disclose the handler further has a spring and a rigid body portion. Keizer et al disclose the handler further has a spring (68) and a rigid body portion (66), the spring configured to allow the tip (64) of the handler to move in relation to the rigid body portion (Figs. 6-7) for biasing/applying force to the tip of the handler. It would have to obvious to one having ordinary skill in the art at the time the invention was made to modify

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Kuppens et al to have the a spring and a rigid body portion, the spring configured to allow the tip of the handler to move in relation to the rigid body portion as taught by Keizer et al for biasing/applying force to the tip of the handler.

Regarding claims 5 and 8, Kuppens et al do not disclose the steps of activating the vacuum source prior to the step of moving the tip of the handler downward toward the thin die; positioning the tip of the handler and thin die above a surface; moving the tip of the handler and thin die downward toward the surface; placing the thin die on the surface. Keizer et al disclose the steps activating the vacuum source prior to the step of moving the tip of the handler downward toward the thin die (arrow 72 in Fig. 20); positioning the tip of the handler and thin die above a surface (Fig. 23); moving the tip of the handler and thin die downward toward the surface (Fig. 24); placing the thin die on the surface (Fig. 25) for mounting the die to the substrate.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Kuppens et al method to have the steps of activating the vacuum source prior to the step of moving the tip of the handler downward toward the thin die; positioning the tip of the handler and thin die above a surface; moving the tip of the handler and thin die downward toward the surface; placing the thin die on the surface as taught by Keizer et al for mounting the die to the substrate.

13. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kuppens et al in view of JP Application JP04143850 to Matsuoka

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Kuppens et al is silent regarding the tip of the handler is made of a flexible material; however, Matsuoka disclose the tip (2) is made of flexible material for preventing unreasonable force from being applied to the die at the time of sucking the die (see purpose). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Kuppens et al to have the tip of handler is made of a flexible material for preventing unreasonable force from being applied to the die at the time of sucking the die.

Allowable Subject Matter

14. Claim 9 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, second paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

Conclusion

15. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

16. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Donghai D. Nguyen whose telephone number is (703) 305-7859. The examiner can normally be reached on Monday-Friday (9:00-6:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Peter D. Vo can be reached on (703) 308-1789. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

DN

A handwritten signature in black ink, appearing to read 'PETER VO', written over a horizontal line.

PETER VO
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 3700